

Instructor Resources Sample

This is a sample of the instructor materials for *Cases in Healthcare Finance*, Seventh Edition, by George H. Pink, PhD, and Paula H. Song, PhD.

The complete instructor materials include the following:

- PowerPoint slides
- Spreadsheets
- Case discussion questions and solutions
- Transition guide to the new edition

This sample includes the materials for case 4.

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CASE 4

TULSA MEMORIAL HOSPITAL (Break-Even Analysis)

Introduction

- **This case illustrates the use of volume break-even analysis to assess the financial impact of several alternative courses of action regarding a hospital's walk-in clinic.**
- **The primary goal of this case is to give you the opportunity to**
 - **illustrate the value of break-even analysis,**
 - **see the effect of inflation on analysis and financial decision-making, and**
 - **understand that numerical analysis has its limitations.**

Spreadsheet Model

- **The model for this case uses data concerning the clinic's historical cash flows along with incremental cost and revenue data to generate projected cash flows per incremental visit for three situations:**
 - 1. No changes are made.**
 - 2. The expanded marketing program is implemented.**
 - 3. The marketing program has an incremental impact.**

Spreadsheet Model

- The model consists of a complete base case analysis. No changes need to be made to the existing MODEL-GENERATED DATA section. However, values in the INPUT DATA section of the student spreadsheet have been replaced by zeros. Students must select appropriate input values and enter them into the cells with values colored **red**. After this is done, any error cells will be corrected and the base case solution will appear.

Q1: Monthly P&L statement 2022

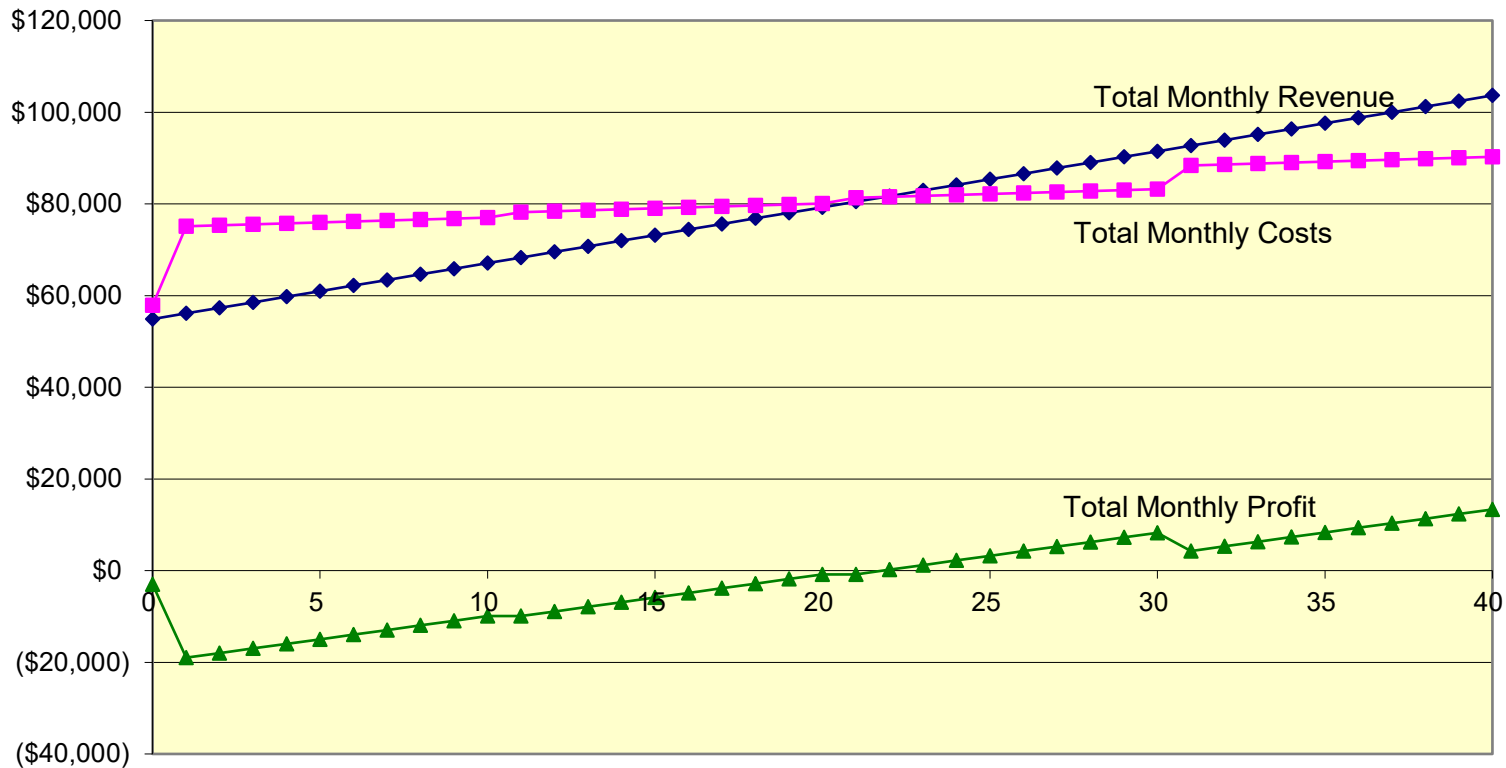
Assuming status quo:

Number of visits	1,350
Net revenue	\$54,888
Total operating expenses	\$57,909
Operating income (loss)	(\$3,021)
Operating margin (%)	-5.5%

Q2: Additional visits to break even

Without new marketing program:

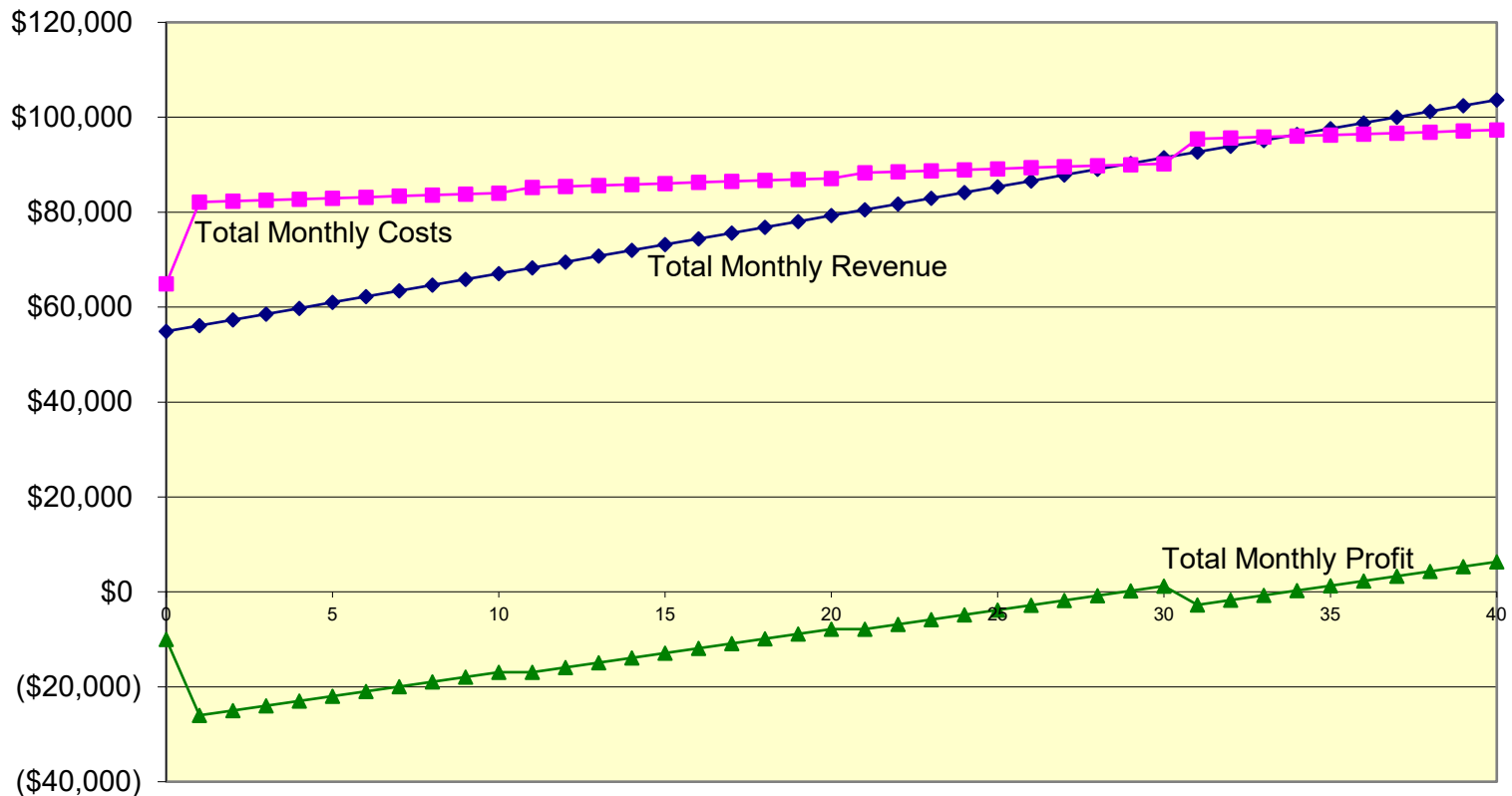
Figure 1
Break-even without New Marketing Program



Q3: Additional visits to break even

With new marketing program:

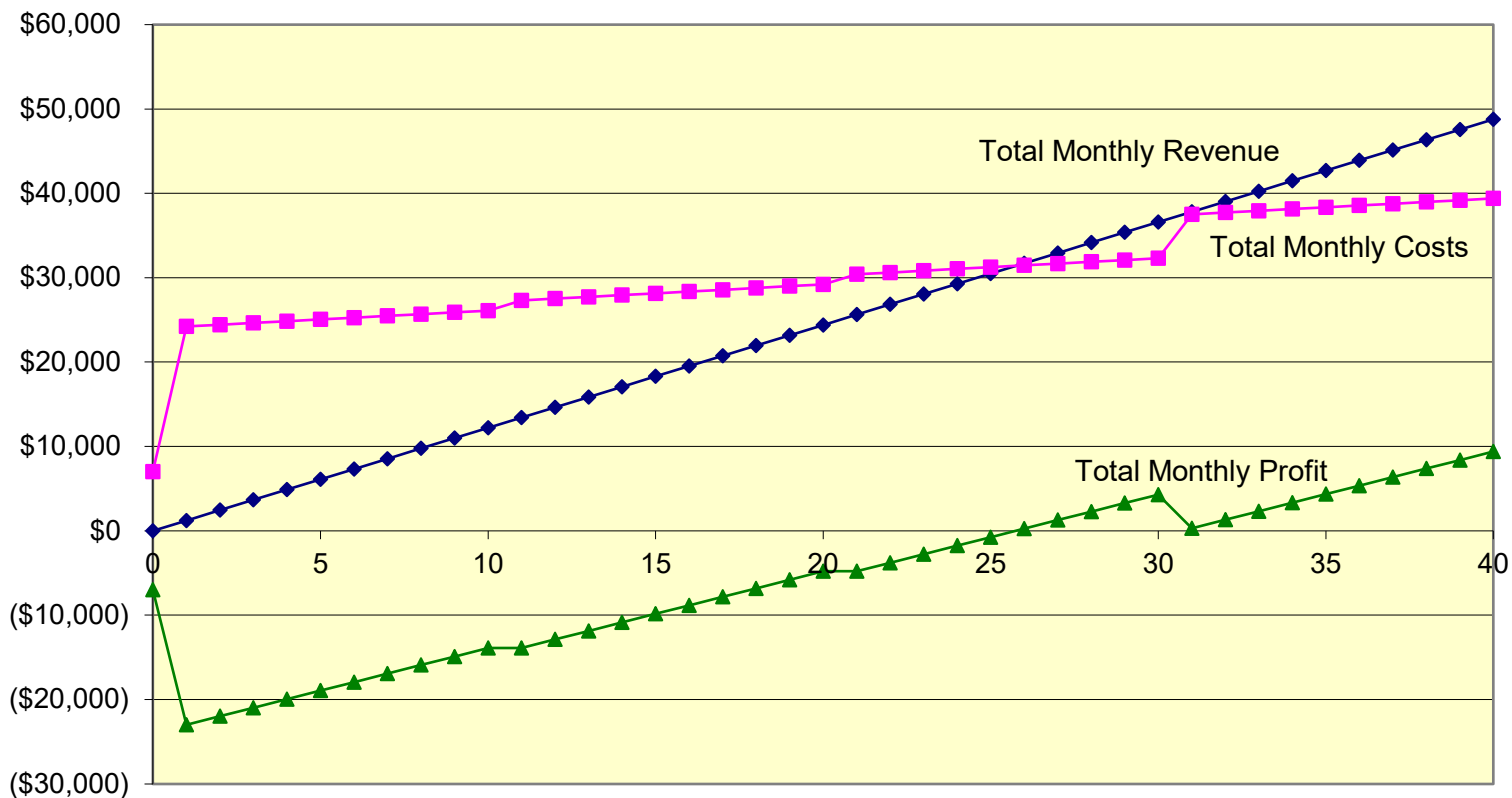
Figure 2
Break-even with New Marketing Program



Q4: Proposed marketing program

Incremental daily visits:

Figure 3
Incremental Break-even of Marketing Program



Q5: Monthly P&L statement 2027

Pro Forma Average Month for 2027:

	2022 Average <u>Month</u>	Inflation <u>Factor</u>	2027 Average <u>Month</u>
Number of visits	1,350		1,350
Net revenue	\$54,888	5%	\$70,053
Salaries and wages	\$13,500	5%	\$17,230
Physicians fees	\$18,000	5%	\$22,973
Malpractice insurance	\$3,215	5%	\$4,103
Travel and education	\$602	2%	\$665
General insurance	\$843	2%	\$931
Subscriptions	\$14	2%	\$15
Electricity	\$1,000	2%	\$1,104
Water	\$130	2%	\$144
Equipment rental	\$105	2%	\$116
Building lease	\$12,500	2%	\$13,801
Other operating expenses	\$8,000	2%	\$8,833
Total operating expenses	<u>\$57,909</u>		<u>\$69,914</u>
Operating income (loss)	<u>(\$3,021)</u>		<u>\$138</u>
Operating margin (%)	<u>-5.5%</u>		<u>0.2%</u>

Q6: Projecting uncertainty

Areas that cause uncertainty:

- Number of visits based solely on historical data
- Input values are not known with certainty

Questions to ask:

- What is the nature of the competitive environment?
- What are the demographic trends for the area?
- Can clinical costs be fixed by long-term contracts?
- What expenses are contained in the “other” category?
- What are the alternatives if the clinic reaches its maximum capacity?

Q7: Monthly malpractice cost allocation

? Is your breakeven analysis biased?

- **The allocation of the malpractice insurance costs is done according to an arbitrary allocation. Thus, YES, your break-even analysis is biased.**
- **To get the true cost of malpractice coverage, ask the insurer for a quote on coverage for just the hospital and for the hospital and the clinic. The difference in the two would be the true cost of the clinic.**
- **The clinic may actually expose the hospital to very minimal liability, and malpractice costs could be close to zero.**

Q8: The implications of taxes

- **TMH is a for-profit institution and thus must pay taxes.**
 - **Tax concerns for this analysis apply only to profits earned by the clinic.**
 - **Taxes will not affect break-even analysis given that at break-even a profit is not earned.**
 - **Taxes will only have an effect as they reduce the profits earned after break-even is reached.**

Q9: Clinic value—outside the numbers

- **Does the clinic have any value to the hospital beyond the financial analysis?**
 - **Yes, the clinic provides multiple qualitative advantages to the hospital.**
 - Reduces emergency department utilization
 - Builds brand loyalty and gets people comfortable using its services
 - Increases the likelihood that patients will use its hospital when needed
 - Uses hospital resources, such as laboratory testing
- **Do the actions by Baptist Hospital weigh in the final decision regarding the clinic?**
 - **Yes, Baptist's actions may be a look into their strategic plan. It may be worthwhile to keep the clinic for its strategic value.**

Q10: Your recommendation

? What did your group choose?

- Option 1: Close the clinic.**
- Option 2: Continue operations as-is.**
- Option 3: Continue operations and expand marketing efforts.**
 - Tax concerns for this analysis apply only to profits earned by the clinic.**
 - Taxes will not affect break-even analysis because profit is not earned at break-even.**

KLP 1: The value of break-even analysis

- **Break-even analysis is used in several ways. For example:**
 - **Risk assessment tool in conventional capital budgeting analyses**
 - **Decision tool when decisions involve only operating costs (as opposed to capital investments)**
 - **When a single input variable, such as volume, is highly uncertain**

KLP 2: The importance of inflation effects

- **Inflation effects often play an important role in financial decision-making. However, it often is difficult to estimate future inflation rates. Also, it is important that differential inflation be incorporated whenever possible.**

KLP 3: Numerical analysis has limitations

- **In this case, you can quantify break-even points with some precision, assuming the inputs were properly specified. Nevertheless, the final decision about the fate of the clinic is more dependent on judgment than on “the numbers.”**

CASE 4 QUESTIONS

TULSA MEMORIAL HOSPITAL Break-Even Analysis

1. Using the historical data as a guide, construct a pro forma (forecasted) profit and loss statement for the clinic's average month for all of 2022 assuming the status quo. **With no change in volume (utilization)**, is the clinic projected to make a profit?
2. Consider the clinic's situation without the new marketing program. How many additional daily visits must be generated to break even? Construct a break-even graph that can be included in your report.
3. Repeat the Question 2 analysis, but now assume that the new marketing program is implemented.
4. Focus solely on the expected profitability of the proposed marketing program. How many incremental daily visits must the program generate to make it worthwhile? (That is, how many incremental visits would it take to pay for the marketing program, irrespective of overall clinic profitability?) Construct a break-even graph.
5. The analysis has considered the clinic's near-term profitability—that is, an average month in 2022. Recast the pro forma (forecasted) profit and loss statement developed in Question 1 for an average month in 2027, five years hence, **assuming that volume is constant over time**. (Hint: You must consider likely changes in revenues and costs due to inflation and other factors. The idea here is to see if the clinic can "inflate" its way to profitability even if volume remains flat.)
6. Although you are basically satisfied with the analysis thus far, you are concerned about the uncertainties inherent in the revenue and expense data supplied by the clinic's director. Assess each element in your Question 1 pro forma profit and loss statement. Are there any items that are more uncertain than the others? How could uncertainty be worked into the analysis? Is there any additional information that you might want to get from the clinic's director?
7. Suppose you just found out that the \$3,215 monthly malpractice insurance charge is based on an accounting allocation scheme that divides the hospital's total annual malpractice insurance costs by the total annual number of inpatient days and outpatient visits to obtain a per episode charge. Then, the per episode value is multiplied by each department's projected number of patient days or outpatient visits to obtain each department's malpractice cost allocation. Does this allocation scheme bias your break-even analysis? (No calculations are necessary.)
8. After all the work thus far in the analysis, you suddenly realize that the hospital, as a for-profit corporation, must pay taxes. What effect does tax status have on your break-even analysis?
9. Does the clinic have any value to the hospital beyond that considered by the numerical analysis just conducted? Do the actions by Baptist Hospital have any bearing on the final decision regarding the clinic?
10. What is your final recommendation concerning the future of the walk-in clinic?
11. In your opinion, what are three key learning points from this case?

CASE 4 SOLUTION

TULSA MEMORIAL HOSPITAL

Break-Even Analysis

Case Information

Type

This case is nondirected, in that it does not contain a specific list of questions that students must answer. Rather, the case contains general guidance or concerns expressed by various parties that students should consider when developing their solutions. If you, as the instructor, want to convert this case to a directed case, and hence provide your students with very specific guidance questions, you can make available the applicable questions for this case contained in the Case Questions section of the online material for instructors.

Purpose

This case illustrates the use of volume break-even analysis to assess the financial impact of several alternative courses of action regarding a hospital's walk-in clinic. Because there are no capital expenditures involved in the alternatives, a discounted cash flow (NPV/IRR) analysis cannot be undertaken.

Complexity

This case is somewhat complex. Although the basic concept of break even is relatively simple, the case includes some excursions that move it into the complex category.

Model Description

The model takes much of the busywork out of the case, so it enables students to spend more time on interpretation and evaluation. Like most case models, the student and instructor versions differ mostly in regard to the input data. However, for this case, the instructor's version contains three worksheets in addition to the basic model. These sheets contain the break-even graphs (charts) used in this solution.

The model for this case uses data concerning the clinic's historical cash flows along with incremental cost and revenue data to generate projected cash flows per incremental visit for three situations: (1) no changes are made, (2) the expanded marketing program is implemented, and (3) the incremental impact of the marketing program. The model is constructed so that graphics display is facilitated. Because of the size of the INPUT DATA section (it contains historical data), it is not shown here. There is no KEY OUTPUT section because the output is best reported in graphical form.

Case Solution

Because the case is nondirected, there is ample opportunity for students to be creative in their solution approaches. Thus, it is impossible to provide a single solution here that is applicable to every student's work. As a starting point in evaluating students' solutions, we provide a solution that is based on the questions contained in the online Case Questions section. It is important, however, to recognize that this solution is merely a starting point, and student work should be graded at least as much on the basis of thought processes, assumptions used, creativity, and the ability to express ideas coherently, as on the resulting numerical answers.

Also, note that some questions address conceptual issues that most students understand but typically would not include in a case presentation/write-up. Such questions are ideal for instructors to use to extend the case discussion when students are working with the nondirected versions. These questions may be directed to the presenting team, if team presentations are used, or offered to the class in general.

- Using the historical data as a guide, construct a pro forma (forecasted) profit and loss statement for the clinic's average month for all of 2022 assuming the status quo. **With no change in (volume) utilization,** is the clinic projected to make a profit?

In forecasting the clinic's cash flows for an average month in 2022, it is important to note that there is no single correct answer. Students' answers will vary somewhat depending on how they interpret and use the historical information presented in the case. Here is one reasonable estimate of the average monthly cash flows:

Pro Forma Average Month:

Number of visits	1,350
Net revenue	<u>\$54,888</u>
Salaries and wages	\$13,500
Physicians fees	18,000
Malpractice insurance	3,215
Travel and education	602
General insurance	843
Subscriptions	14
Electricity	1,000
Water	130
Equipment rental	105
Building lease	12,500
Other operating expenses	<u>8,000</u>
Total operating expenses	<u>\$57,909</u>
Operating income (loss)	<u>(\$3,021)</u>
Operating margin (%)	<u>-5.5%</u>

The logic we used in creating the above statement is as follows. First, we used the January/February 2022 average for the number of visits and net revenue, because the case states that (1) clinic usage is not seasonal and (2) a competitor recently closed its doors. These facts lead us to conclude that the most recent historical data is the best estimate for the future. For the remaining cash flows, we used either the 2021 average month data or the January/February 2022 average or the combined average, depending on which historical amount we thought to be most representative of the future. Obviously, there can be differences of opinion in this regard, so solutions can vary somewhat, but if a solution varies widely from that presented above, there is probably some logical flaw in the analysis.

2. Now consider the clinic's situation without the new marketing program. How many additional daily visits must be generated to break even? Construct a break-even graph that can be included in your report.

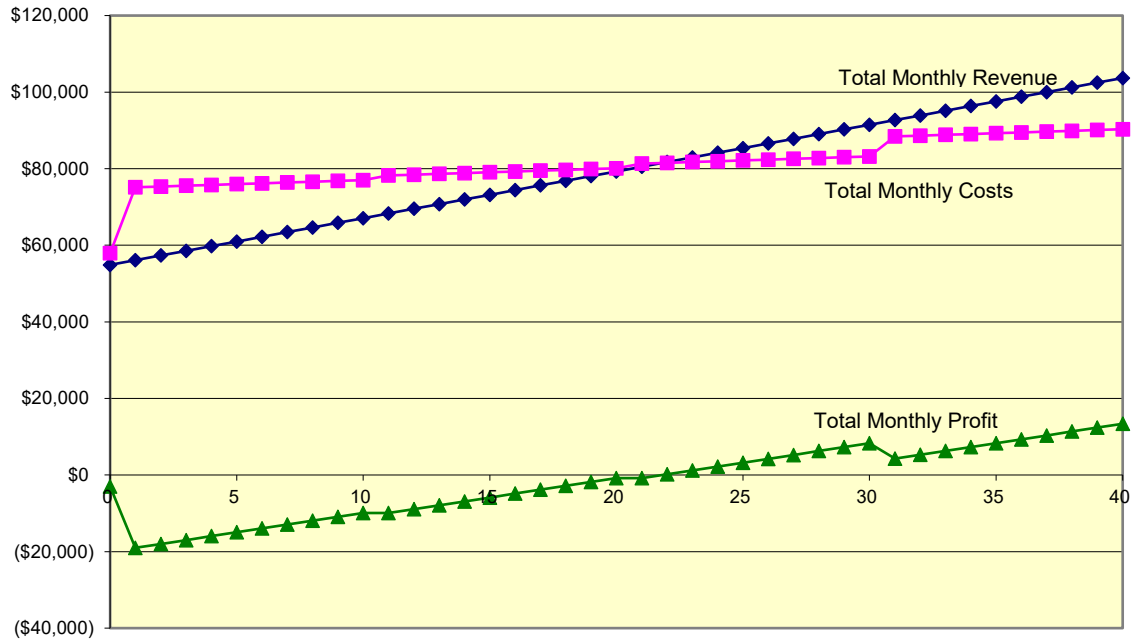
To begin, consider the clinic's cash flows assuming that the new marketing program is not undertaken. Here are the tabular data: (Note that the table only includes 0 to 25 incremental daily visits. The spreadsheet extends out to 40 incremental visits.)

Summary Financial Statements:

	Number of Additional Visits per Day					
	0	5	10	15	20	25
Total monthly visits	1,350	1,500	1,650	1,800	1,950	2,100
Total daily visits	45	50	55	60	65	70
Net revenue per visit	\$40.66	\$40.66	\$40.66	\$40.66	\$40.66	\$40.66
Total net monthly revenue	\$54,888	\$60,987	\$67,085	\$73,184	\$79,283	\$85,381
Total current costs	\$57,909	\$57,909	\$57,909	\$57,909	\$57,909	\$57,909
Total incremental costs	0	18,050	19,100	21,150	22,200	24,250
Current + incremental costs	\$57,909	\$75,959	\$77,009	\$79,059	\$80,109	\$82,159
Operating income (loss)	(\$3,021)	(\$14,972)	(\$9,924)	(\$5,875)	(\$826)	\$3,222
Operating margin (%)	-5.5%	-24.6%	-14.8%	-8.0%	-1.0%	3.8%

Break-even occurs at approximately 22 incremental visits (70 daily patient visits). Figure 1 contains a plot of the data.

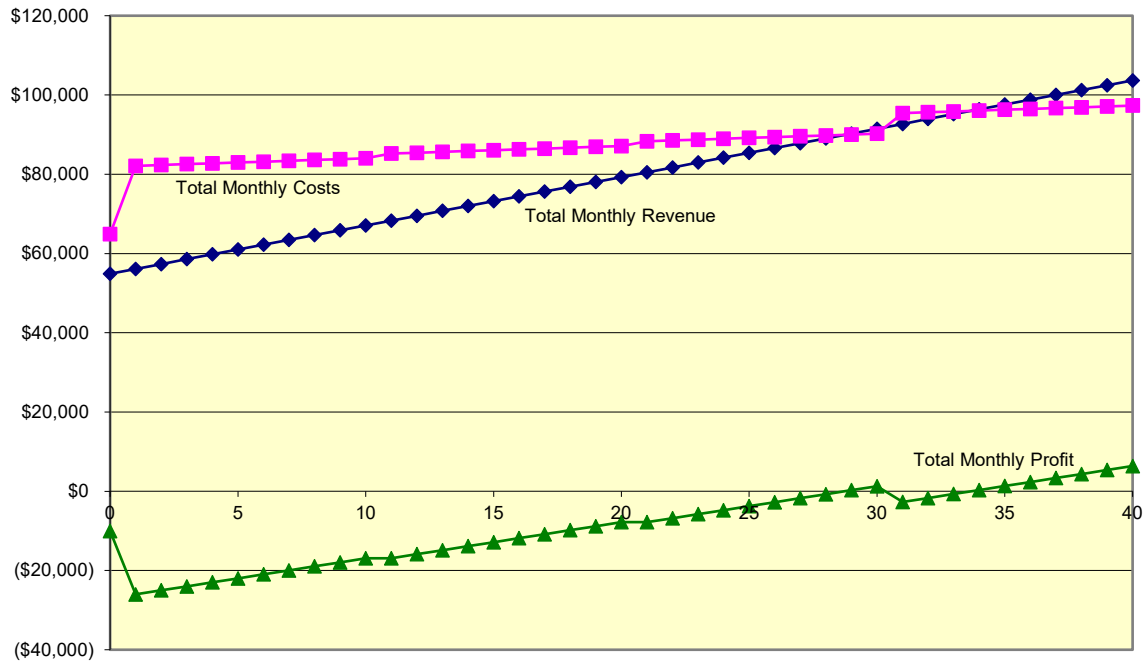
Figure 1
Breakeven without New Marketing Program



3. Repeat the Question 2 analysis, but now assume that the new marketing program is implemented.

Figure 2 contains the graphical analysis. With the proposed marketing program, the added costs push the break-even point out further. Now, break-even occurs at about 28 incremental daily visits (73 visits per day).

Figure 2
Breakeven with New Marketing Program

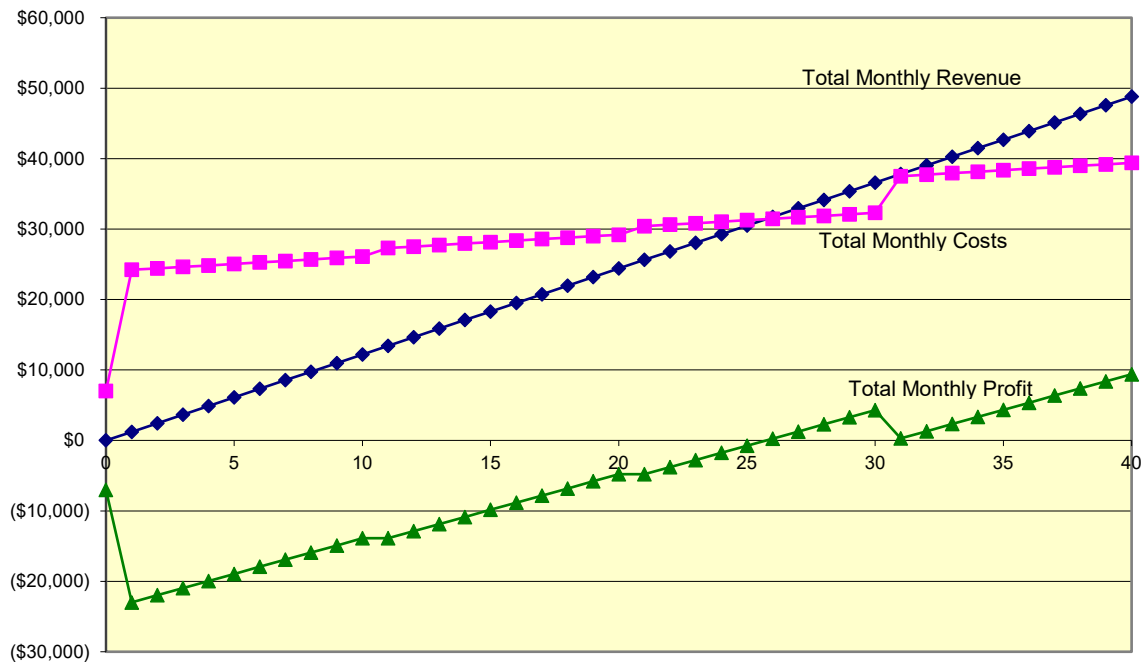


4. Focus solely on the expected profitability of the proposed marketing program. How many incremental daily visits must the program generate to make it worthwhile? (That is, how many incremental visits would it take to pay for the marketing program, irrespective of overall clinic profitability?) Construct a break-even graph.

By focusing on the incremental cash flow analysis, a somewhat different picture emerges. Here, the incremental revenues of adding additional patient visits per day are compared directly with the incremental costs of the marketing program and the variable and semi-fixed costs associated with increased patient load. We see that incremental costs will be covered when about 25 additional patients are seen daily. Thus, if the marketing program can generate 25 or more incremental visits, it will pay for itself. See Figure 3.

Note that the clinic will not break even at this level of incremental daily visits. We have already determined the break-even point with the new marketing program to be about 28 incremental visits. Thus, 25 visits will pay for the marketing effort, but it will not make up for the existing profit shortfall.

Figure 3
Incremental Breakeven of Marketing Program



5. The analysis has considered the clinic's near-term profitability—that is, an average month in 2022. Recast the pro forma (forecasted) profit and loss statement developed in Question 1 for an average month in 2027, five years hence, **assuming that volume is constant over time**. (Hint: You must consider likely changes in revenues and costs due to inflation and other factors. The idea here is to see if the clinic can "inflate" its way to profitability even if volume remains flat.)

In constructing a pro forma average-month statement for 2027, two separate rates of inflation were used: 2 and 5 percent. Generic input factors—those factors that are similar for all businesses—were compounded forward at a 2 percent rate on the basis of economy-wide general inflation trends. Inputs that are peculiar to the healthcare industry were compounded forward at the higher 5 percent rate, because healthcare input costs have been increasing faster than general inflation in recent years. Finally, clinic revenues were also increased at the 5 percent rate, because healthcare costs to consumers and insurers have tended to increase at about twice the rate of general inflation.

(Note to Instructors: As we are writing this solution, the economy remains weak. We believe [and hope] that the current economic situation is temporary and that the economy will return to its former long-run growth pattern. Also, the impact of health "reform" remains unclear at this time, so we have not tried to incorporate the impact of policy changes in this case solution.)

Pro Forma Average Month for 2027:

	2022 Average Month	Inflation Factor	2027 Average Month
Number of visits	1,350		1,350
Net revenue	\$54,888	5%	\$70,053
Salaries and wages	\$13,500	5%	\$17,230
Physicians fees	\$18,000	5%	\$22,973
Malpractice insurance	\$3,215	5%	\$4,103
Travel and education	\$602	2%	\$665
General insurance	\$843	2%	\$931
Subscriptions	\$14	2%	\$15
Electricity	\$1,000	2%	\$1,104
Water	\$130	2%	\$144
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Other operating expenses	\$8,000	2%	\$8,833
Total operating expenses	<u>\$57,909</u>		<u>\$69,914</u>
Operating income (loss)	<u>(\$3,021)</u>		<u>\$138</u>
Operating margin (%)	<u>-5.5%</u>		<u>0.2%</u>

The end result is that the clinic would just barely break even in five years under the assumptions used above. However, many of the assumptions are suspect. For example, perhaps insurers will pressure the clinic for increased discounts, or increasing competition from retail clinics will depress prices, or physician shortages will cause physicians' fees to soar. The purpose of this question is to get students to think about the impact of inflation and trends in the healthcare industry on revenue and cost projections. Clearly, there can be a wide variety of answers depending upon the assumptions made. For example, if lease payments do not increase with inflation, then the clinic would be more profitable in 2027 than shown above. Conversely, if managed care pressures reduce the rate of growth of healthcare charges or payer-negotiated discounts increase, then the picture in 2027 would look worse, perhaps far worse, than shown above.

The bottom line here is that it is probably not going to be easy to just "inflate" one's way to profitability. The key to increased profitability is to either increase volume (revenues) or reduce costs, or both.

6. Although you are basically satisfied with the analysis thus far, you are concerned about the uncertainties inherent in the revenue and expense data supplied by the clinic's director. Assess each element in your Question 1 pro forma profit and loss statement. Are there any items that are more uncertain than the others? How could uncertainty be worked into the analysis? Is there any additional information that you might want to get from the clinic's director?

In the pro forma (forecasted) statement for 2022, some items are more uncertain than others. First, the anticipated number of visits is based solely on the historical patient load. Any number of factors, including demographic shifts, competitors' actions, and implementation of the new marketing plan, could cause the number of visits to change over time. Because this is probably the most uncertain of the variables in the analysis, we have not attempted to forecast this variable. Indeed, this is the whole purpose of this type of break-even analysis. The number of visits is allowed to vary, and the hospital's senior management must make judgments on what this figure might be.

None of the other input values are known with certainty, and the further into the future we forecast, the more uncertainty is associated with all variables. Clearly, however, some of the amounts, such as magazine subscriptions, can be forecasted with some precision, while factors such as liability insurance can be highly variable.

Uncertainty could be incorporated into the analysis in several ways. Perhaps the most practical way is to conduct a scenario analysis, whereby worst-case and best-case scenarios would be developed in addition to the base case. The worst case would contain the highest estimates for costs and the lowest estimates of revenues, while the best case would contain the opposite extremes. Then, break-even under worst-case conditions would occur at higher patient volumes than the base case, while break-even under best-case conditions would occur at lower patient volumes. Scenario analysis would (1) vividly point out that the input values are not known with certainty, and (2) give senior managers the opportunity to see estimates of the clinic's financial performance under some alternative assumptions. The downside of scenario analysis is that more data can often lead to more difficulty in interpretation, and hence complicate the decision process. An analyst has to balance the benefits of additional information against the costs of developing and interpreting the data.

Here are some additional questions that might aid in the analysis:

- (1) What is the nature of the competitive environment?
- (2) What are the demographic trends for the area? (Is the population expected to grow? Will there be a shift in the age distribution? And so on.)
- (3) To what degree can clinic costs be fixed by long-term contracts to eliminate uncertainty?
- (4) What types of expenses are contained in the Other Operating Expenses category?
- (5) What alternatives exist for expanding the clinic if it reaches its maximum capacity of 85 visits per day?

7. Suppose you just found out that the \$3,215 monthly malpractice insurance charge is based on an accounting allocation scheme that divides the hospital's total annual malpractice insurance costs by the total annual number of inpatient days and outpatient visits to obtain a per episode charge. Then, the per episode value is multiplied by each department's projected number of patient days or outpatient visits to obtain each department's malpractice cost allocation. Does this allocation scheme bias your break-even analysis? (No calculations are necessary.)

The current expense for malpractice insurance is determined according to an arbitrary allocation that may or may not be close to the actual impact of the clinic on the liability costs of the hospital. The best approach here would be to contact the insurer and get a quote for malpractice coverage (1) for the hospital alone, and (2) for the hospital and clinic. The true cost of malpractice coverage for the clinic is the difference between the two. It may turn out that the clinic adds so little to the liability exposure of the hospital that the two quotes are the same. If that occurs, then the actual liability costs associated with the clinic are zero, regardless of what is implied by the arbitrary allocation scheme.

Any break-even analysis of this type should focus on cash flows rather than on accounting income. The true profitability of the clinic is a function of its ability to generate more cash than it consumes, rather than the numbers reported by accountants on the basis of generally accepted accounting principles (GAAP).

8. After all the work thus far in the analysis, you suddenly realize that the hospital, as a for-profit corporation must pay taxes. What impact does tax status have on your break-even analysis?

If the analysis focuses solely on the break-even point, the addition of taxes has no impact. The rationale here is that, by definition, the tax liability is zero at the break-even point. Of course, the addition of taxes will tend to reduce the profits of the clinic if it operates above the break-even point and reduce the losses if it operates below the break-even point. (Losses from the clinic can be charged against taxable income generated by the hospital itself, and hence lower the business's tax liability.)

9. Does the clinic have any value to the hospital beyond that considered by the numerical analysis just conducted? Do the actions by Baptist Hospital have any bearing on the final decision regarding the clinic?

There are several reasons why the clinic might have more value than indicated by the numerical analysis. First, patients that use the clinic, but have not used the hospital, may be inclined to now use the hospital. Second, patients from the clinic are likely using some of the hospital's ancillary services for clinical tests. Third, the visibility of the clinic near the shopping mall may act as an advertisement for the hospital and bring in new patients. Finally, the recognition by the community of the hospital's concern for the community's well-being might bring added financial benefit to the hospital through contributions or increased business. Any marginal profits to the hospital that result from new patients, ancillary services, and any other facets of the clinic's operations must be credited to the clinic.

The fact that Baptist Hospital is buying a local primary group practice is a strong indicator that Baptist either is forming an integrated delivery system or believes that ownership of primary physician practices places it in a better competitive position than merely granting hospital privileges. If the logical competitive response is to do the same, the hospital may be able to use the clinic as one element of its own system. Thus, it may be worthwhile to hold onto the clinic for its strategic value as a potential future primary care practice site.

10. What is your final recommendation concerning the future of the walk-in clinic?

According to the numerical analysis, it appears that the clinic will find it difficult to turn a profit unless there is some positive change in the operating environment. Based solely on the quantitative analysis, there is some justification to close the clinic. However, there are good reasons why it should be kept open. To begin, the losses are minimal when compared to the overall high profitability of the hospital, and hence the clinic is not a significant financial burden. In addition, the social value of the clinic to the community may outweigh the expected financial losses. More important, through the mechanisms discussed in the answer to Question 9, the clinic probably generates incremental profits for the hospital that more than offset its losses. Also, the clinic would fit well with a move to capture patients through ownership of primary care practices should the hospital move in that direction. Finally, closing the clinic would be costly, primarily because of the costs of breaking the lease and costs associated with personnel reduction or relocation. In any event, the most prudent recommendation is to keep the clinic open.

Assuming that it is kept open, the new marketing program should be implemented if it is believed that it will generate at least 26 additional patient visits per day. This is a tough call, and students can probably support a decision either way depending on their beliefs regarding the effectiveness of the marketing program.

11. In your opinion, what are three key learning points from this case?

- (1) **The value of break-even analysis.** Break-even analysis is used in several ways. For example, as a risk assessment tool in conventional capital budgeting analyses or as a decision tool when decisions involve only operating costs (as opposed to capital investments). It is particularly useful when a single input variable, such as volume, is highly uncertain.
- (2) **The importance of inflation effects.** Inflation effects often play an important role in financial decision making. However, it often is quite difficult to estimate future inflation rates. Also, it is important that differential inflation be incorporated whenever possible.
- (3) **Numerical analysis has its limitations.** In this case you can quantify break-even points with some precision, assuming the inputs were properly specified. Nevertheless, the final decision as to the fate of the clinic is more dependent on judgment than on “the numbers.”